MASS. UM4.UL1.2: P94

UMASS/AMHERST
312066 0278 1292 0

PROTECTING THE COMMONWEALTH'S FUTURE: THE ROLE OF THE UNIVERSITY OF LOWELL

GOVERNMENT DOCUMENTS
COLLECTION
SEP 27 1990
University of Massachusetts
Depository Copy

Prepared by William T. Hogan
President, University of Lowell

April, 1990

902/450

DATE DUE

NOV 12 2011			

HIGHSMITH #45115

PROTECTING THE COMMONWEALTH'S FUTURE: THE ROLE OF THE UNIVERSITY OF LOWELL

SUMMARY

It is widely acknowledged that higher education is critical to Massachusetts' long-term economic growth. Lacking natural resources, the Commonwealth can hope to preserve its economic well-being only if it maintains leadership in technological innovation while enhancing its social institutions and physical environment. These imperatives require vigorous programs of scholarship and research, and the general education of large numbers of knowledgeable, creative and ethically aware citizens, many of whom receive professional training as engineers, scientists, businessmen, teachers, and health service workers. Yet despite these needs, which higher education institutions are expressly designed to address, publicly supported universities have been singled out repeatedly for particularly large funding cuts during the State's current fiscal crisis. What explains the virulent attack currently being mounted against the Commonwealth's public universities? A perspective that may account for this self-destructive assault argues that Massachusetts has little need for an extensive public higher-education sector because the State has many private colleges and universities, some of world-class reputation. Moreover, this argument adds, if publicly supported higher education is permitted to exist in Massachusetts, it should not incur the high costs of pursuing excellence; for since private colleges and universities already deliver high quality educational opportunities, maintaining similar opportunities in the public sector would just waste public resources on duplicating services that private institutions already provide. In the context of the State's present financial crisis, this argument concludes, such duplication would be indefensible.

The paper which follows discusses this argument's fundamental error: its failure to acknowledge that among their many other beneficial activities, public universities play certain indispensable roles in furthering the Commonwealth's social and economic well-being--roles which private institutions are by their nature not impelled to play. The paper also documents the disproportionate burden borne by Massachusetts' public universities in recent State budget cuts. The case of the University of Lowell is highlighted because its potentials for enhancing the Commonwealth's economic and social well-being are particularly significant, and because the erosion of those potentials by recent funding cuts has been particularly severe.

THE UNIQUE CONTRIBUTIONS OF PUBLIC UNIVERSITIES

Publicly-funded higher education institutions tend to structure significant parts of their traditional academic activities of research, education and service around direct engagement with public needs and problems. A particularly clear manifestation of this tendency is the century old federal land-grant assistance program, in which publicly supported land grant colleges and universities spurred the expansion and modernization of America's agriculture and industries.

Private universities, particularly the long-established independent institutions of the east, are supported primarily by private funds, and thus are free to let the individual interests of highly specialized faculty shape research agendas. As a result, scholarship at these private institutions tends to focus on general theory and basic research. There are exceptions to this rule, of course: some private university research addresses public problems, and some research at public institutions aims to clarify basic theory and expand basic knowledge. But in the main, private scholarship has shown itself most likely to focus on basic research, while public scholarship tends to link theory and knowledge to pressing, real world public issues. Over time, it is true, progress in general theory and basic research can spawn ideas and applications that are useful in addressing public concerns. Nevertheless, as social, economic and environmental dynamics grow more closely linked and mutually disruptive, it becomes increasingly urgent to anticipate and respond to emerging public problems directly, immediately

Together, then, public and private universities provide complementary, mutually essential vehicles for social progress. It is necessary to preserve both sectors, and to seek and support excellence in each. Neither is in any significant sense a substitute for the other. One without the other is socially incomplete.

THE SPECIAL ROLE OF THE UNIVERSITY OF LOWELL

Each of the state's public universities can document extensive social benefits from the particular agenda of public needs and problems which it addresses. The University of Lowell's special emphasis is to spur long-term, sustainable economic growth throughout the Commonwealth by participating in state, regional, national and worldwide activities that enhance the Commonwealth's long-term economic and social well-being. To illustrate:

- In September 1987, Gordon Bell, then National Science Foundation Assistant Director for Computer and Information Science and Engineering, visited the University of Lowell's Center for Productivity Enhancement and reviewed its work. In a letter from NSF to the University following his visit, Bell stated that the Productivity Center was "a model of an excellent university-industry research program that could broadly affect competitiveness." Bell stated:

  > I'd like to see a commitment at other universities to the approach you've demonstrated which combines engineering and science with the goal [of] serving a very broad industrial base in a variety of ways. We need to build an inventory of the critical processes in which America is uncompetitive, and [in] which universities could take active leadership roles like you have done.

- In 1987, the University of Lowell focused on a concern that Massachusetts' industrial competitiveness could easily be destroyed, perhaps irretrievably, if preoccupation with purely technical approaches to productivity enhancement generated unanticipated damage to the health and well-being of the region's labor force. To address this important public policy concern, the University initiated two parallel undertakings. First, the University's Center for Productivity Enhancement created a Work Environment Laboratory to introduce labor / management relations and occupational safety and health policy issues into technical productivity enhancement initiatives. Second, the College of Engineering inaugurated a Work Environment Department to integrate occupational safety and health concerns into the education of engineering professionals. A nationally prominent physician, occupational epidemiologist, and head of the Division of Occupational and Environmental Health at UCLA, was brought to the University of Lowell to head both the Work Environment Department and the Work Environment Laboratory. The Work Environment Department is already recognized throughout the world as a unique, pathbreaking approach to engineering education.

- The Massachusetts Toxics Use Reduction Act of 1989 created a Toxics Use Reduction Institute (TURI) -- a multi-disciplinary research, public and professional education and policy center -- and located it at the University of Lowell. The Institute, which currently is in a one-year planning period, will begin formal operations in the fall of 1990. It will sponsor research, conduct training, educate professionals and the public, and provide technical support to governments to promote reduction in the use of toxic and hazardous chemicals in industry and commerce. TURI's activities will involve the University's faculty and students as well as governmental officials, industrial managers and professionals, trade union representatives, advocates from health and environmental organizations, and faculty from other universities.

- In October 1987, the National Institute for Environmental Health Sciences awarded the Work Environment Laboratory a $3 million grant to lead a New England consortium of labor organizations and higher-education institutions in a five-year project to train 5,000 workers from the six New England states in protecting themselves from toxic hazards in the workplace. Participating in the consortium under the University of Lowell's leadership are state labor organizations and coalitions, the Service Employees International Union, and Harvard, Tufts, and Boston University. The project currently is training 1,100 hazardous-waste workers each year from Massachusetts and other New England States. Massachusetts public employees trained by the project include members of the Governor's Environmental Strike Force, the Massachusetts Department of Environmental Protection, the Mass Bay Transportation Authority, and a variety of emergency responders including police and firefighters.

- In July 1988, the Work Environment Laboratory was designated one of three national finalists for a $3.5 million grant from the Semiconductor Industry Association to study reproductive and ergonomic hazards to workers in the manufacture of semiconductors. Approximately 100 institutions across the country were invited to present their qualifications for conducting the research. Upon reviewing these presentations, the Association's scientific advisory board concluded that only the University of Lowell and ten other universities were qualified to submit research proposals for the grant. The other ten universities were: Harvard, Yale, Columbia, Johns Hopkins, University of California (Davis), University of Southern California, University of Texas, University of Pittsburgh, University of Alabama, and University of Washington (Seattle). After reviewing detailed research proposals from these universities, the Association's scientific advisory board selected the University of Lowell, the University of Southern California, and the University of California at Davis as the research grant program's three competing finalists.

- The faculty of the College of Engineering's Work Environment Department receives requests from all over the world to train employees of public agencies and private corporations in occupational and environmental health. In November 1988, for example, the World Health Organization funded the Department's faculty in presenting an environmental epidemiology course in Kuala Lampur to train trainers of public health officials in developing countries all across Southeast Asia. Currently, the Department's faculty has been asked by the Medical University of Hungary (Pecs) and the Institute of Social Studies (Budapest) to organize a worldwide conference on occupational and environmental health policy. Other current requests for workshops and educational modules from the Department's faculty have been received from Switzerland, 13 Pacific Rim countries, China, Venezuela, Spain and Costa Rica. The Association of State and Territorial Solid Waste Officials, whose members inspect factories and other solid-waste generating facilities throughout the United States for safety and health hazards, has asked the Work Environment Laboratory to train trainers and develop instructional materials on workplace health and safety measures for its national membership. The Department is currently developing a collaborative research project on early detection of occupational asthma for possible joint funding by the U.S. National Institutes of Health and the Italian National Health Service.

- The Work Environment Laboratory's Technology and Work program is an innovative, interdisciplinary program of education, training, policy analysis, planning and research which seeks to develop and apply practical methods for integrating human needs and social goals into technology development. The program works with Massachusetts labor organizations, industrial firms, labor/management groups, educational institutions, and public agencies to foster sustainable economic productivity and growth

- The College of Education's Center for Field Services and Studies has established, at the request of the superintendents of schools in the region, a two-way television network that currently links eight school systems with each other and with the University. The network has enabled nearby school systems to enrich the quality of their instruction in science, math and foreign languages by taking advantage of one another's individual strengths and by utilizing University faculty and equipment to enhance instructional presentations.

- A tremendous influx of Southeast Asian and Hispanic refugees has transformed the Lowell public schools from 14% minority in 1984 to 45% today. Teachers in Lowell and throughout the region lack training in language acquisition skills. New models of teaching and learning are desperately needed. To address these needs, the University of Lowell is sponsoring a Demonstration School for language acquisition and multicultural learning. Through extensive collaborative planning with educational researchers and University and area school personnel, innovative plans for pre-service and in-service teacher training have been developed, and funds have been secured for renovation by 1992 of an available building to house 200 children for multilingual (Khmer, Spanish and English) instruction of children ages three to eight years. The Lowell schools have committed funds to the Demonstration School for teacher salaries, supplies and transportation. Because the need is urgent, the school will be opened in September 1990 by renting modular units until building renovations are completed, if funds for that rental can be obtained. The entire 13,000 pupil Lowell school system, and other state school systems that are struggling with rapid inmigration of non-English-speaking students, will benefit from the Demonstration School project.

- For the past five years the University of Lowell has been conducting a College Prep program for Lawrence High School. Serving 100 students annually, the College Prep program has been widely cited for its effectiveness in improving students' academic skills, their self-image as learners, and the academic culture of their high school. Students spend seven weeks at the University during the summer and return on Saturdays during the academic year.

- In an interdisciplinary project funded jointly by the Bay State Skills Corporation and 11 Massachusetts biotechnology firms, faculty of ULowell's Department of Chemistry and staff of the College of Education's Center for Field Services and Studies are training middle and high-school math and science teachers to incorporate biotechnology subjects into high-school curricula. Curriculum development training will be delivered in part through the Center for Field Services and Studies' interactive television network. The project aims to expose high school students to biotechnology concepts and methods to stimulate interest in biotechnology employment and college studies leading to biotechnology careers. In this way, the curriculum development project aims to help produce the trained workforce needed to keep Massachusetts' emergent biotechnology industry competitive.

- Faculty of the College of Arts and Sciences coordinate the CoSy Computer Conferencing System, an electronic communication system that uses the University of Lowell's Academic Computer Center to link the science and math secondary-school teachers of the Merrimack Valley in exchanges of information, ideas, resources and assistance. Some 200 science and math teachers are logged onto this network currently. In addition, the STARS (Science Teachers Area Resource Swap), an organization of teachers from K-12 through college levels (also coordinated by College of Arts and Sciences faculty) uses the CoSy system to integrate computer conferencing with professional development workshops. Participation in CoSy computer conferencing by area teachers is presently limited by shortages of equipment and staff. Plans to add humanities and social science teachers to the network when and if funding becomes available would double the network's current size and use.

- Within the Chemistry Department, a molecular modeling laboratory has been created primarily with equipment and software donated by private corporations. The research projects executed in this laboratory, which focus on designing and developing new materials for advanced computer systems, have attracted international attention. Japan's Ministry of International Trade and Industry (MITI) has agreed to fund a laboratory project on molecular optics. (This project had its Massachusetts funding cut by the decimation of the MCEC (Massachusetts Centers of Excellence Corporation) budget during recent funding reductions. In one of the laboratory's current projects, a chemistry department faculty member is using molecular modeling to design and build next-generation materials that Digital Equipment Company will use to build high-performance computer mass-storage devices.

- The Productivity Center's Intelligent Manufacturing Laboratory is currently working with Wang Laboratories to achieve greater miniaturization in computer fabrication through integration of artificial intelligence, robotics, machine vision and NASA surface-mount technology, This project aims to create a state-of-the-art prototype manufacturing design that would make firms which use it more competitive.

- Some of the largest computer companies in the world are negotiating with the University for rights to license and incorporate into their future computer products graphics-imaging technology recently developed at ULowell . For example, the University has signed a contract with NYNEX to conduct a feasibility study of a five-year program to bring graphics-imaging technology developed at ULowell to major national markets.

- The Department of Plastics Engineering has the only ABET-accredited plastics engineering program in the United States. Plastics account for approximately 10-12 % of the Massachusetts economy and make the fourth largest contribution to the U.S. gross national product. The Institute for Plastics Innovation, which will provide services to the plastics industry in order to advance the state of current plastics manufacturing technology, represents one of the first formal programs to implement the University's commitment to spawning new businesses as well as new technology. The Institute's research program will focus on integrating the total process of plastics manufacturing, from initial design through quality control of plastics products. GE, Dow Chemical Company and other major corporations have committed themselves to support the Institute financially.

- The trend towards non-proprietary software and hardware has had major impacts on the computer electronics industry. Competitiveness in this key industry requires that technical standards be developed to facilitate transfer of technological innovations. In recognition of the economic importance of such standards, ULowell faculty members chair national standards committees of the American National Standards Institute (ANSI) in two highly important computer areas, "Windows" and graphics-imaging. ANSI's graphics-imaging committee grew directly out of cutting edge graphics work developed at ULowell. Creation of these ANSI standards will enable American computer manufacturers to bring their new products to market more quickly, thereby increasing their competitiveness.

- American students' precollege preparation in the sciences is woefully inadequate compared to students from most of the world's other industrialized countries. A pilot initiative for strengthening precollege preparation in science has been developed at the University of Lowell's Chemistry Department through successful NSF grants and support from Digital Equipment Corporation. The Department is currently seeking additional grants to expand the pilot to develop and institutionalize multiple means of enhancing the quality of science instruction in the elementary, middle and secondary school grades of the region's public schools. In addition, undergraduate ULowell students with distinguished academic records in the sciences will be offered financial support to pursue masters degrees in return for teaching science in the public schools for at least two years.

- The costs of inadequate health care are enormous. A national conference on workplace health promotion estimated in 1981 that several common health problems (heart disease, alcohol abuse, back pains, colds and flu, arthritis and vague aches and pains) cost

American business and service organizations between $856 million and 1.06 billion each workday. The high social costs of these unmet health needs, which seriously impact all the region's residents, are magnified in minority populations. Large and rapidly growing numbers of Hispanic and Southeast Asian immigrants have settled in the Merrimack Valley's cities over the past several years. Few of these new immigrants have had ready access to American health services and values. As a result, their health problems are more acute, and their care needs more pronounced, than the general population's. Ultimately, all of the region's residents will be affected by this problem. In another fifteen years, as immigration continues, the large populations of Hispanics and Southeast Asians living in the Lawrence/Lowell area will become a significant portion of the region's workforce. If these minority populations' traditionally poor health care does not improve, the resulting monetary costs of low workforce productivity could damage the entire region's industrial competitiveness.To avoid such a damaging drain on the region's fragile economy, the University of Lowell's Board of Trustees established the Center for Health Promotion, allied with the College of Health Professions, to lead a coherent effort to improve health care throughout the region, particularly for the region's Hispanic and Southeast Asian residents. Through its teaching, research and service programs, and its partnerships with governmental agencies, health-service providers, and health-care consumer organizations, the Center will enable students, faculty and practitioners to work together to address significant problems of health care research, policy development and service delivery.

- Under a special initiatives award from the Federal Government, faculty members of the Department of Nursing have established an innovative clinical experience in health promotion for nursing students working with Hispanic and Southeast Asian clients in conjunction with the Greater Lawrence Family Health Center.

- A professor in the department of Clinical Laboratory Sciences is heading a research team of investigators from Tufts and Harvard on animal studies that show that oil pressed from rice hulks produces striking (up to 40 percent) reductions in serum cholesterol. Controlled follow-up clinical studies on humans are being planned. The study confirms evidence produced by human clinical trials done in India and Japan on rice bran oil's effectiveness in reducing LDL ("bad") cholesterol without reducing HDL ("good") cholesterol. Recently reported in the Wall Street Journal, the study is the first U.S. investigation of the oil's effects on cholesterol levels.

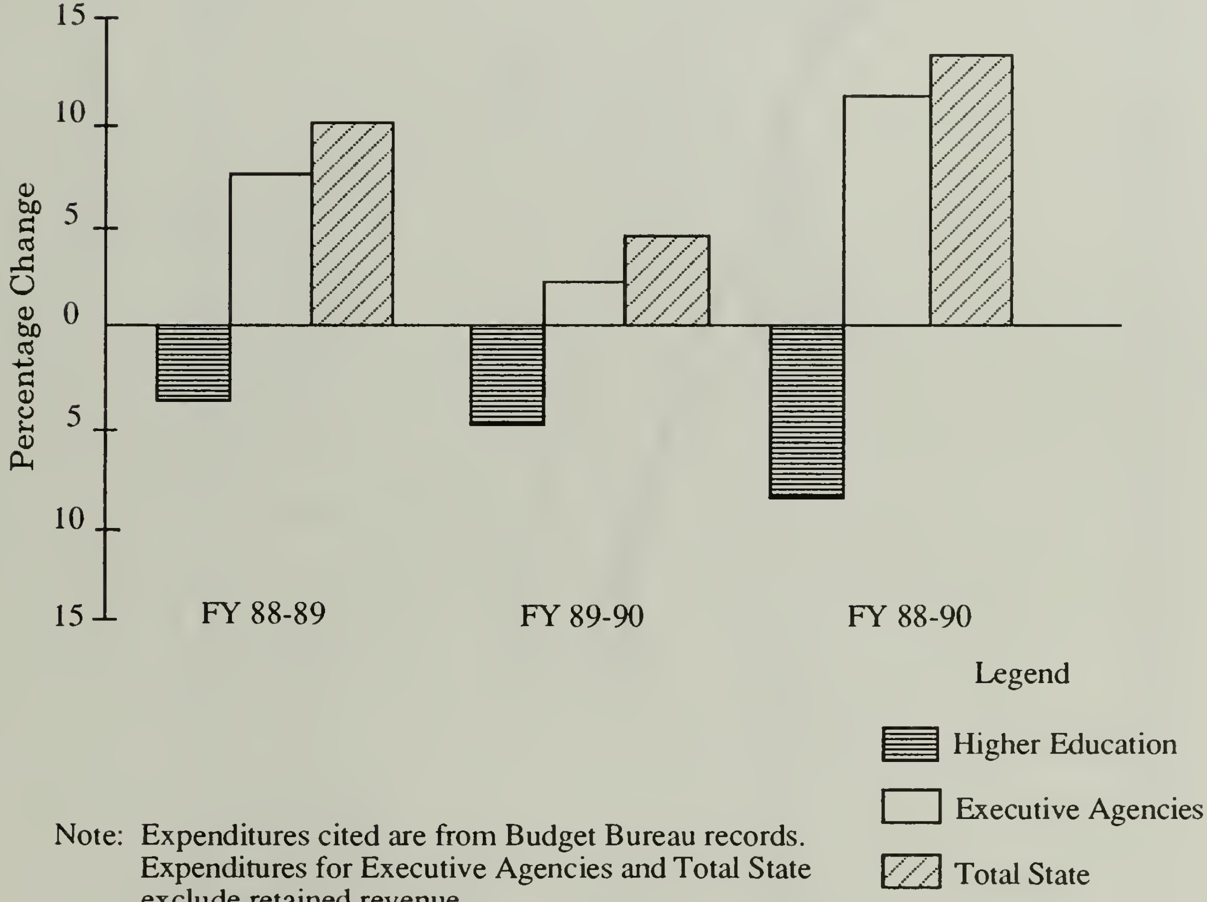
- Nearly eighteen million American adults abuse alcohol. Consequences of excessive alcohol consumption include liver and cardiovascular diseases, absenteeism from work, loss of productivity, suicide, homicide and traffic fatalities. Approximately 97,000 alcohol-related deaths occur annually. The concurrent use of alcohol and tobacco products is thought to greatly increase the risk of some types of cancers and elevated blood cholesterol levels. From these and other consequences of alcohol abuse, the annual economic cost to the United States is estimated at $120 billion. A faculty member in the Department of Biological Sciences has been actively involved in alcohol-tobacco research for over a decade. Using a variety of clinical and laboratory analyses, he has uncovered key metabolic changes in cell membranes, liver function, plasma enzymes, and circulating blood cholesterol carriers (lipoproteins) which may serve as important biochemical markers of alcohol abuse. His work has been presented nationally at the American Heart Association and Research Society on Alcoholism meetings, and internationally at conferences in the People's Republic of China, Italy, and the Soviet Union. To date, three book chapters, seventeen scientific articles and twenty-five abstracts have been published on these research findings. In addition, two of his publications have been cited in the 1983 Surgeon General's Report "The Health Consequences of Smoking - Cardiovascular Disease." More than $1.3 million in outside grants and contracts have been awarded to the University of Lowell to support his research.

THE ASSAULT ON THE UNIVERSITY OF LOWELL AND OTHER PUBLIC COLLEGES AND UNIVERSITIES

Despite their unique potentials for creating immediate and long-term social benefits, public colleges and universities in Massachusetts have suffered heavy and disproportionate funding cuts as the Commonwealth's fiscal difficulties have worsened. As Figure 1 shows, state funding of public colleges and universities dropped by nearly 10 percent between fiscal years 1988 and 1990, while state funding of executive-branch agencies and total state activities increased by approximately 10 and 13 percent respectively during that same period.

Figure 1

PERCENTAGE CHANGES IN STATE EXPENDITURES FOR HIGHER EDUCATION, EXECUTIVE AGENCIES AND TOTAL STATE ACTIVITIES FY88-FY90 (Excluding Retained Revenues)

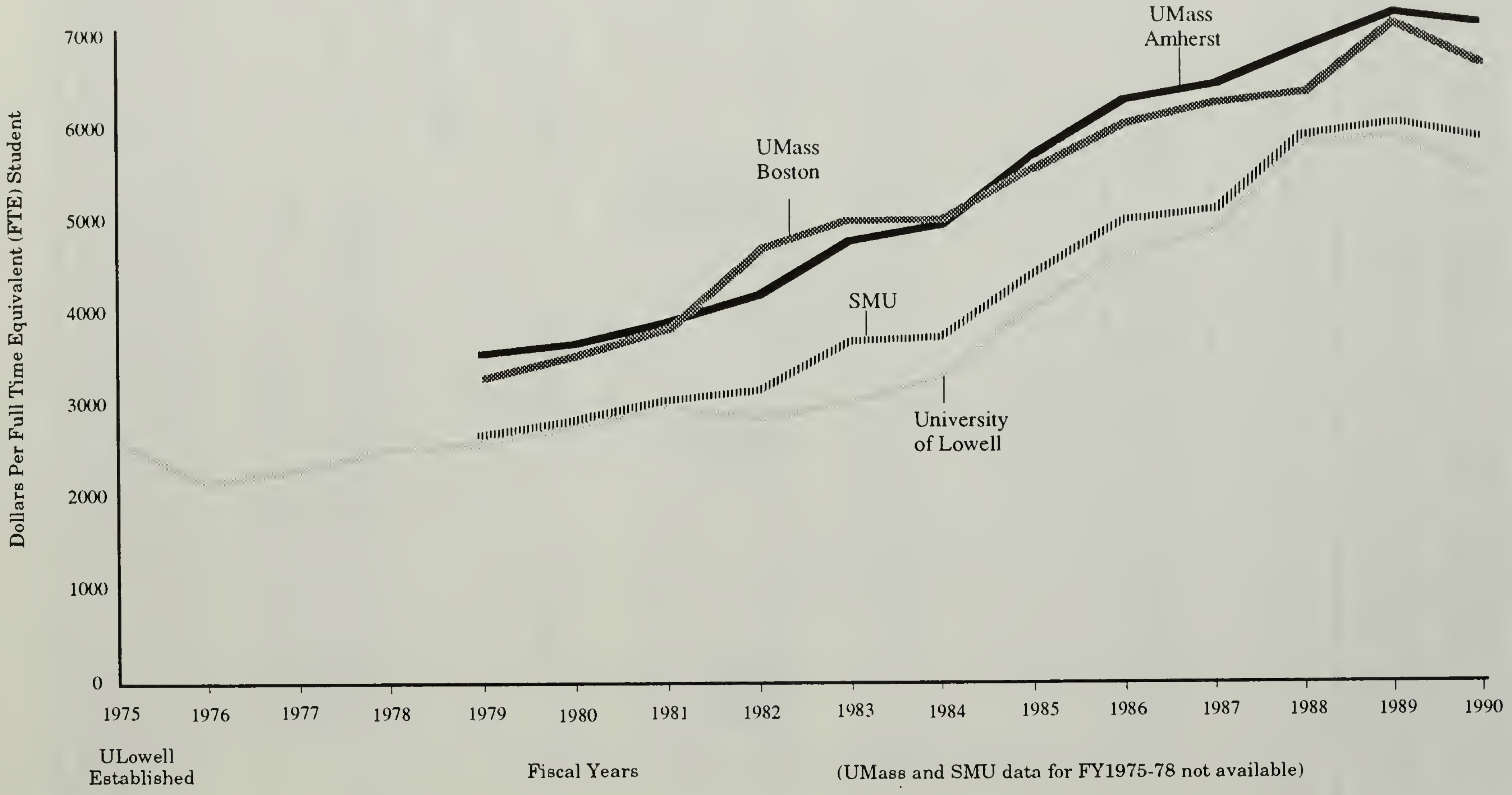


Note: Expenditures cited are from Budget Bureau records.
Expenditures for Executive Agencies and Total State exclude retained revenue.
Expenditures for Executive Agencies and Total State exclude Higher Education expenditures.

Funding cuts in Massachusetts' public higher-education system have been distributed across all colleges and universities in proportion to each institution's past percentage share of the total system's maintenance budget. This method of allocating funding reductions has weakened the University of Lowell more than other Massachusetts public institutions because historically the University's maintenance budgets per FTE student have been funded significantly lower than budgets of comparable Massachusetts public universities (Figure 2).

Figure 2

COMPARISON OF STATE FUNDING OF MASSACHUSETTS PUBLIC UNIVERSITIES IN DOLLARS PER FTE STUDENT
(UMass Amherst, UMass Boston, SMU and University of Lowell)



As figure 2 shows, the funding gap between ULowell and comparable State universities has persisted for at least 11 years, and has not changed since the Board of Regents was created in 1981. Presently, the University's funding per FTE student remains markedly lower than comparable State universities, and lower than some State and community colleges (Figure 3).

Figure 3

STATE FUNDING OF PUBLIC COLLEGES AND UNIVERSITIES PER FTE STUDENT, FY90

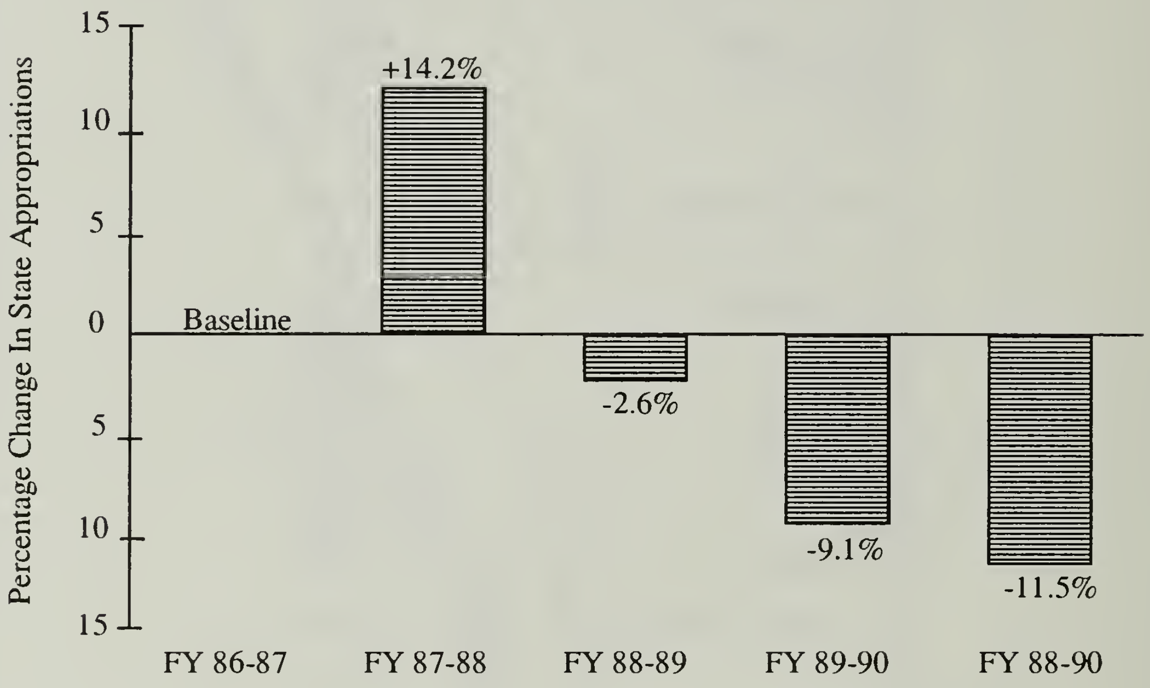
College or University	Allocation Per FTE Student
UMass Amherst	$7,210
UMass Boston	6,781
SMU	5,899
ULowell	5,590
University Average	$6,644
Mass. Maritime	$11,385
Mass. Art	8,562
Fitchburg	5,089
Westfield	4,698
Framingham	4,333
North Adams	4,322
Worcester	4,286
Salem	4,074
Bridgewater	3,969
State College Average	$ 4,703
Roxbury	$ 9,941
North Shore	5,744
Springfield	5,352
Berkshire	4,876
Massasoit	4,727
Greenfield	4,666
Quinsigamond	4,368
Mt. Wachusett	4,321
Middlesex	4,288
Holyoke	4,246
Bunker Hill	4,246
Cape Cod	4,067
Northern Essex	3,819
Bristol	3,707
Mass. Bay	2,835
Community College Average	$ 4,505

Source: Board of Regents Associate Chancellor Dars' Memo on Cost per FTE, 10/23/89).

Cuts in the University of Lowell's historically underfunded budgets have been heavy over the past three fiscal years, amounting to a total reduction of 11.5 % (Figure 4).

Figure 4

PERCENTAGE CHANGE IN STATE-APPROPRIATED FUNDS FOR UNIVERSITY OF LOWELL FY87-90 (Including Maintenance, Library, Demonstration School and Tsongas Center)

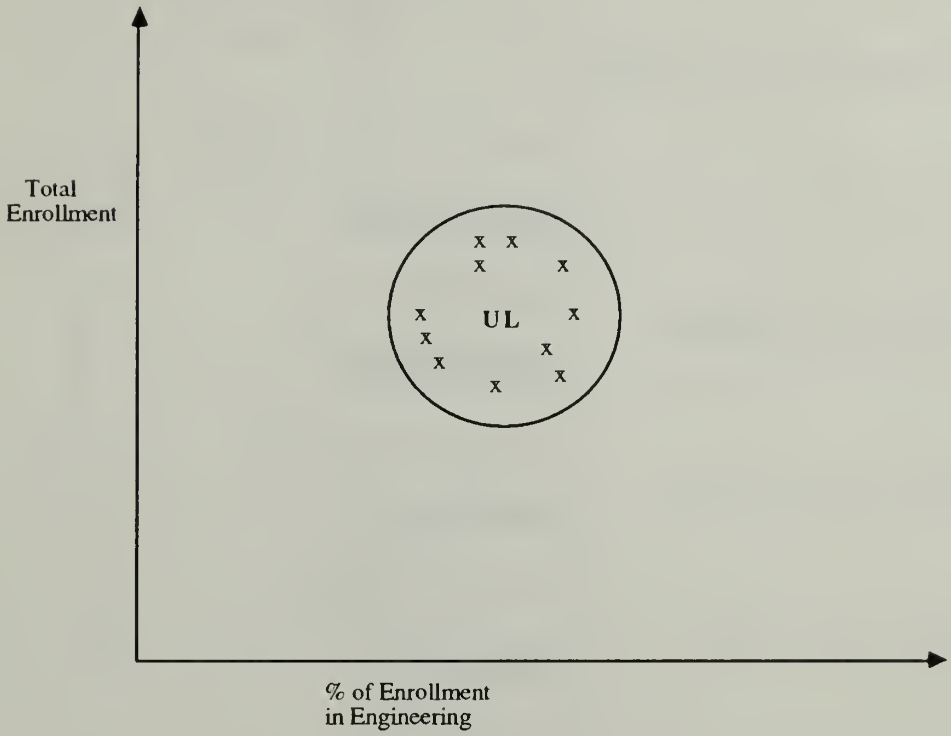


	FY 87	FY 88	FY 89	FY 90
Appropriations:	$50,625,915	$57,809,663	$56,295,565	$51,149,412

During the past several years, the Commonwealth's support of ULowell has been weak compared to other predominantly engineering public institutions across the nation. This funding gap is significant to the Commonwealth's economic future because many of those public institutions serve states that vie with Massachusetts to attract jobs and economic development. To document comparisons of funding disparities, 11 public and private institutions whose total enrollments and percent of enrollment in engineering are approximately equal to those of ULowell, were identified from approximately 240 public and private colleges and universities with engineering programs. (Figure 5.) The funding levels of the public institutions in this group were then compared with ULowell's funding (Figure 6).

Figure 5

PUBLIC AND PRIVATE COLLEGES (SHOWN AS "X") WHOSE TOTAL ENROLLMENTS AND PERCENT OF ENROLLMENT IN ENGINEERING APPROXIMATE THOSE OF ULOWELL



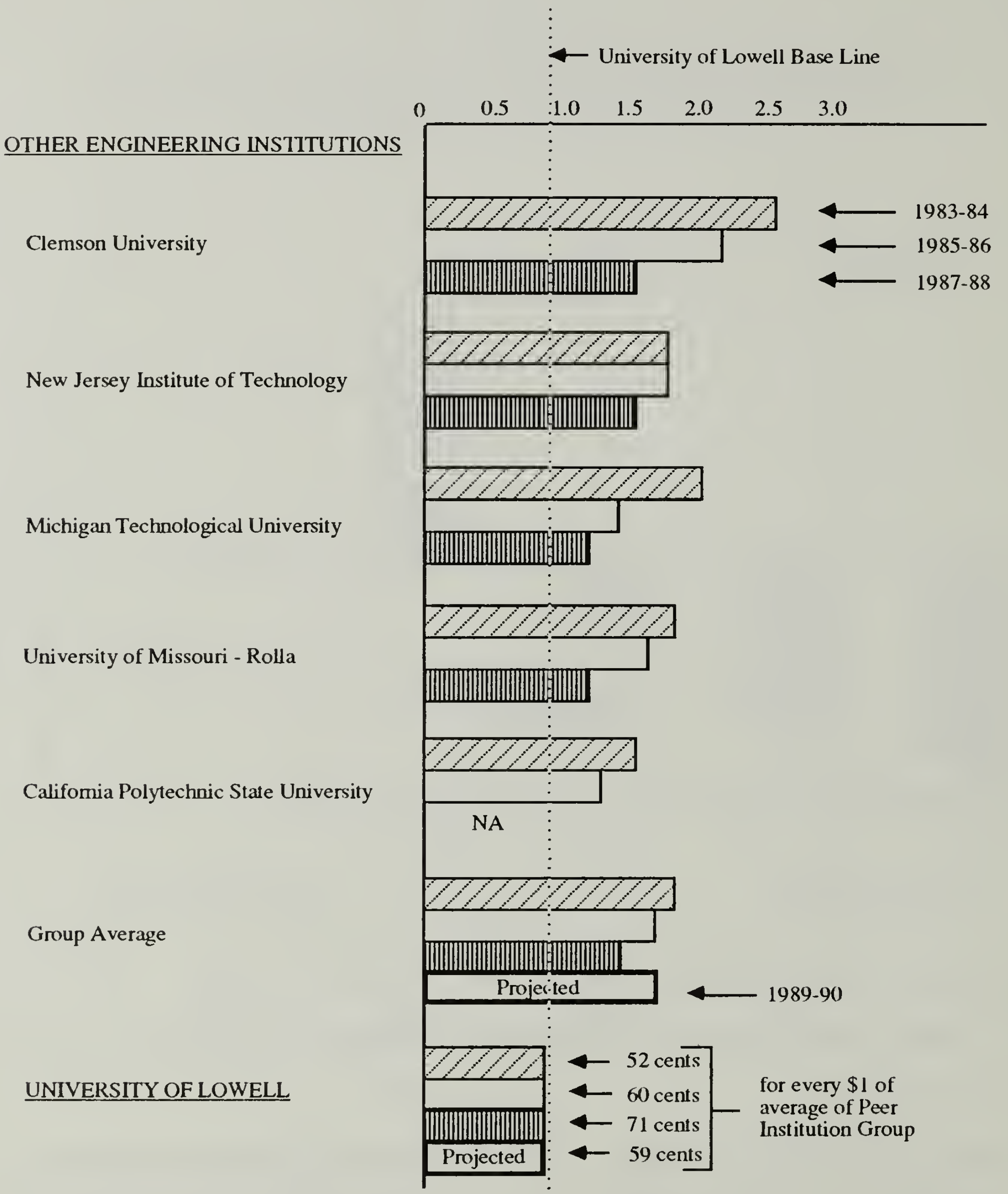
The colleges and universities falling within the ULowell circle are:

Public Institutions	Private Institutions
California Polytechnic State University	Cornell University
City College of the City University of New York	Drexel University
Clemson University	MIT
Michigan Technological University	Rensselaer Polytechnic Institute
New Jersey Institute of Technology	Worcester Polytechnic Institute
University of Missouri-Rolla	

Figure 6 compares ULowell's operating expenditures per FTE student with those of the six public institutions above over the past several years. The comparison shows that ULowell has functioned with only half to three quarters of those institutions' average operating budgets .

Figure 6

OPERATING DOLLARS PER FTE STUDENT (NORMALIZED) AT UNIVERSITY OF LOWELL AND OTHER PREDOMINANTLY ENGINEERING INSTITUTIONS
FY 1983-84, 1985-86, and 1987-88



Note: Data unavailable for City College, CUNY

ULowell's underfunding compared to its public competitors creates even more difficulties for ULowell than the size of the funding gap might suggest because of ULowell's extensive inventory of costly professional accreditations (Figure 7).

Figure 7

ACCREDITATIONS HELD BY PUBLIC PREDOMINANTLY ENGINEERING INSTITUTIONS
FY89

	Graduate Enrollment as a % of Total Headcount not FTE	Eng.	Eng. Tech.	Indus Tech.	Bus.	Teach Educ.	Nurs.	Phys. Ther.	Allied Health (var.)	Mus.	Art	Arch.	Interior Design	Landsc Arch.	Clin. Pych	For-estry	Ranking of State's Support of Public Higher Ed. on a Basis of $/per capita	
																	$	Rank
Calif. Poly	7%	X	X		X							X	X	X			$181	7
City C, CUNY	19%	X	X			X	X		X			X		X	X		$174	11
Clemson U	21%	X			X	X	X					X				X	$168	12
Mich Tech U	7%	X	X													X	$145	26
NJ Inst. Tech	38%	X	X									X					$147	24
U Mo-Rolla	24%	X															$107	47
U Lowell	***25%***	***X***	***X***	***X***	***X***	***X***	***X***	***X***	***X***	***X***	***X***						***$148***	***23***

Sources: Dollars per Capita from Edward Hines, Illinois State University, by telephone
Other data directly from institutions listed, by telephone

The University's high proportion of relatively costly graduate programs is another reason why across-the-board funding reductions at Massachusett's public higher-education institutions have had disproportionately negative effects at the University of Lowell. As Figure 8 shows, for example, ULowell grants a higher percentage of graduate degrees than all of the six New England land-grant universities. Figure 8 also demonstrates ULowell's importance to the regional economy in terms of number of graduate degrees granted, having produced more graduate level degrees in 1988-89 than four of the six New England land grant institutions.

Figure 8

NEW ENGLAND LAND-GRANT UNIVERSITIES AND U. LOWELL:

DEGREES GRANTED 1988-89

Institution	Bachelor's	Master's	Doctor's	Total	Grad Degrees as % of Total
U Conn	2,908	978	198	4,084	29 %
U Maine	1,406	301	36	1,743	19 %
U Mass-Amherst	4,336	984	329	5,649	23 %
U N H	2,080	317	36	2,433	15 %
U R I	1,909	490	75	2,474	23 %
U Vermont	1,804	356	44	2,204	18 %
U Lowell	***1,429***	***584***	***23***	***2,036***	***30 %***

Source: IPEDS 1989 Completions reports to the U.S. Dept. of Education, obtained by phone calls to institutions. Certificates and medical and law degrees are not included.

Data from the six New England land-grant institutions also indicate how ULowell's extensive graduate programs have helped bring considerable external research funding into the state and region, thereby creating economic multiplier effects and generating economically valuable new knowledge and technology applications.

Figure 9

NEW ENGLAND LAND-GRANT UNIVERSITIES AND U. LOWELL:

EXTERNALLY FUNDED RESEARCH DOLLARS

FY 1989

Institution	Research Dollars
U Conn	34,000,000
U Maine	11,000,000
U Mass-Amherst	not available
U N H	22,000,000
U R I	32,000,000
U Vermont	16,000,000
U Lowell	***11,000,000***

Note:
UConn excludes $34,000,000 for Medical School
UVermont excludes $30,000,000 for Medical School
UNH excludes $3,000,000 for agricultural pass through grant

Source:
Calls to institutions by ULowell research foundation staff, February/March 1990.

The accumulated impacts of protracted underfunding on ULowell's operations can be seen by comparing the University's staffing with staffing at similar higher-education institutions across the nation, in the New England region, and in Massachusetts. Using data from Federal reports, figures 10, 11 and 12 compare various staffing categories at ULowell a) to those of six public predominantly engineering institutions in other states, b) to comparable institutions in other New England States, and c) to comparable Massachusetts universities, respectively. These tables show that in virtually all cases ULowell operates with between 1/3 and 2/3 of the staff per FTE student employed by other comparable institutions. In only two cases does ULowell's staffing exceed 75% of that of other institutions (77% and 89%). In all 12 other cases, ULowell's staffing is less than 70% of comparable institutions. Using different data categories provided by the Board of Regents, figure 13 documents the same profile of thin staffing at ULowell. The table reveals that the University is staffed as or more thinly than (a) all other Massachusetts universities, (b) 2/3 of the Commonwealth's state colleges, and (c) 2/3 of the Commonwealth's community colleges.

Salaries provide another measure of ULowell's capacity to compete with other institutions for quality faculty, students and administrators. Although the University's faculty salaries, like most of its administrative salaries, are below category averages for other comparable institutions in such heavily enrolled areas as engineering, they generally are far more competitive than they previously had been, thanks to recent funding requests for that purpose supported by the Governor. (Figures 14 and 15) Prospects for maintaining long-term salary competitiveness are dim, however, in the state's current fiscal climate. And in the short term, the University's capacity to attract and retain the highly qualified faculty needed to carry out the institution's public missions is undermined, notwithstanding temporarily competitive salaries, by the serious deficiencies in support personnel, equipment, and professional development opportunities created by years of inadequately funded maintenance budgets.

CONCLUSION

The mindless assault on public universities must be reversed. Funding cuts in Massachusetts' public universities threaten the higher-education system's unique capacity for addressing urgent public needs and problems. ULowell bears a particularly heavy share of current system-wide funding reductions because each additional cut to the University's budget exacerbates long-standing stresses built up during fifteen unbroken years of underfunding. Thus, current reductions in the University's already weak budget undermine the University's ability to provide quality programs, maintain quality faculties, and attract quality students and administrators. They also perpetuate the inequities that ULowell's students have suffered ever since the University was established. In 1981, facing a sixth year of underfunding, ULowell opted to protect quality in its educational programs by restricting itself to a minimum number of graduate programs critical to the region's economic and social health. Further reductions in these core programs are not in the State's best interests.

The shortsighted policy of financing the state's current revenue shortfall on the backs of public universities endangers the Commonwealth's long-term economic viability. At minimum, the University of Lowell must be protected against further funding cuts. In addition, the region's economic welfare requires that ULowell's public funding be increased systematically towards parity with competing universities in states that currently vie with Massachusetts for economic development and technological growth.

ULowell has made a commitment to quality graduate education in order to address critical regional needs -- a viable industrial base, environmental quality, competent teachers for secondary and higher education, and effective delivery of health services. This is an expensive, long-term institutional commitment. It requires, in turn, a long-term commitment of strong support and adequate funding from the Commonwealth's public and private leaders. Anything less will squander ULowell's significant potentials for meeting public needs.

Figure 10

FULL-TIME EMPLOYEES AT PUBLIC UNIVERSITIES WITH ENGINEERING ENROLLMENTS COMPARABLE TO ULOWELL'S

Data from Reports to the U.S. Dept. of Education - Fall 1989

Number per 1,000 FTE Students

Institution	FTE Students	Fac	Exec	Prof	Cler	Tech	Skill	Serv	Total
Calif. Poly	15,139	54	8	14	14	14	4	9	117
City C, CUNY	9,494	72	11	15	18	9	6	18	149
Clemson U	14,299	71	23	48	50	35	15	20	262
Mich Tech U	6,037	58	9	30	37	10	7	20	171
NJ Inst Tech	5,509	54	13	24	29	16	7	22	165
U Mo-Rolla	5,343	72	16	13	40	8	15	15	179
Average	9,304	64	13	24	31	15	9	17	173
U Lowell	***10,581***	***48***	***6***	***9***	***15***	***9***	***3***	***14***	***104***

Students: full-time-equivalent student enrollment, calculated from IPEDS Fall Enrollment 1989 reports. IPEDS includes all students in credit courses. Formula for converting IPEDS headcount into FTE: 1 full-time student = 1 FTE; 3 part-time students = 1 FTE.

Employees: numbers of full-time employees by EEO category, from EEO-6 reports, fall 1989. UVermont data were adjusted to exclude medical school. Faculty includes visiting full-time faculty and faculty on paid and unpaid leave. Exec/Admin/Man includes assistant deans, directors, coordinators, and others with supervisory responsibility.

Figure 11

FULL-TIME EMPLOYEES AT NEW ENGLAND LAND-GRANT UNIVERSITIES AND ULOWELL

Data from Reports to the U.S. Dept. of Education - Fall 1989

Number per 1,000 FTE Students

Institution	FTE Students	Fac	Exec	Prof	Cler	Tech	Skill	Serv	Total
U Conn			data not yet available						
U Maine	10,795	64	16	39	54	9	12	48	242
U Mass-A	23,025	60	5	47	49	15	16	39	231
U N H	10,772	69	11	41	37	12	9	28	207
U R I	12,723	61	11	26	36	9	6	43	192
U Vermont	9,114	68	7	63	37	33	7	25	240
Average	13,286	64	10	43	43	16	10	37	223
U Lowell	***10,581***	***48***	***6***	***9***	***15***	***9***	***3***	***14***	***104***

Students: full-time-equivalent student enrollment, calculated from IPEDS Fall Enrollment 1989 reports. IPEDS includes all students in credit courses. Formula for converting IPEDS headcount into FTE: 1 full-time student = 1 FTE; 3 part-time students = 1 FTE.

Employees: numbers of full-time employees by EEO category, from EEO-6 reports, fall 1989. UVermont data were adjusted to exclude medical school. Faculty includes visiting full-time faculty and faculty on paid and unpaid leave. Exec/Admin/Man includes assistant deans, directors, coordinators, and others with supervisory responsibility.

Figure 12

FULL-TIME EMPLOYEES AT MASSACHUSETTS PUBLIC UNIVERSITIES

Data from Reports to the U.S. Dept. of Education - Fall 1989

Number per 1,000 FTE Students

Institution	FTE Students	Fac	Exec	Prof	Cler	Tech	Skill	Serv	Total
SE Mass U	6,093	57	6	22	20	10	6	14	135
UM-Amherst	23,025	60	5	47	49	15	16	39	231
UM-Boston	9,256	56	6	30	36	10	6	6	150
Average	12,239	55	6	27	30	11	8	18	155
ULowell	***10,581***	***48***	***6***	***9***	***15***	***9***	***3***	***14***	***104***

Students: full-time-equivalent student enrollment, calculated from IPEDS Fall 1989 Enrollment reports. IPEDS includes all students in credit courses. Formula for converting IPEDS headcount into FTE: 1 full-time student = 1 FTE; 3 part-time students = 1 FTE.

Employees: numbers of full-time employees by EEO category, from EEO-6 reports, fall 1989. Faculty includes department chairs, visiting full-time faculty and faculty on paid and unpaid leave. Exec/Admin/Man includes assistant deans, directors, coordinators, and others with supervisory responsibility, but some institutions count some of these positions with Other Professional.

Figure 13

COST PER FTE STUDENT AND NUMBER OF STUDENTS SERVED PER STAFF MEMBER

Fall 1989

	Cost Per FTE Student	FTE Students Per Staff
UNIVERSITIES		
U. Mass Amherst	$7,210	6.7
U. Mass Boston	6,781	6.7
SMU	5,899	7.7
U. of Lowell	5,590	8.3
STATE COLLEGES		
Mass. Maritime	11,385	4.5
Mass. Art	8,562	4.5
Fitchburg	5,089	7.1
Westfield	4,698	8.3
Framingham	4,333	8.3
North Adams	4,322	10.0
Worcester	4,286	10.0
Salem	4,074	10.0
Bridgewater	3,969	10.0
COMMUNITY COLLEGES		
Roxbury	9,941	5.3
North Shore	5,744	7.1
Springfield	5,352	7.1
Berkshire	4,876	7.7
Massasoit	4,727	7.7
Greenfield	4,666	8.3
Quinsigamond	4,368	8.3
Mt. Wachusetts	4,321	8.3
Middlesex	4,288	8.3
Holyoke	4,246	9.1
Bunker Hill	4,246	9.1
Cape Cod	4,067	9.1
Northern Essex	3,819	10.0
Bristol	3,707	10.0
Mass. Bay	2,835	14.3

Sources
Board of Regents-Associate Vice Chancellor Dars' memo of 10/23/89 and Chancellor Jenifer's memo of 12/15/89.

Figure 14

SALARIES OF SELECTED ADMINISTRATORS AT PUBLIC UNIVERSITIES
1989-90

Position	Univ. of Lowell	New England, NY, NJ	All States
President	$96,800[1]		
Highest		$148,800	$168,000
Lowest		96,800	62,100
Average		117,400	113,900
Chief Academic Officer	93,300		
Highest		106,000	148,000
Lowest		90,000	62,400
Average		95,800	93,500
Chief Business Officer	86,900		
Highest		112,000	146,500
Lowest		81,000	46,300
Average		95,000	88,000
Chief Instit. Advancement Off.	(82,500)[2]		
Highest		103,000	119,500
Lowest		73,300	42,700
Average		88,400	80,400
Chief Technical Resources Off.	92,800	no data[3]	no data
Dean, Arts & Sciences	Acting[4]		
Highest		112,000	138,300
Lowest		72,000	59,100
Average		89,600	85,500
Dean, Business	91,000		
Highest		114,000	155,500
Lowest		76,000	50,000
Average		96,000	92,400
Dean, Education	80,000		
Highest		98,600	113,000
Lowest		73,300	47,600
Average		87,100	80,000
Dean, Engineering	89,900		
Highest		125,500	160,500
Lowest		56,500	56,500
Average		95,300	98,100

Position	Univ. of Lowell	New England, NY, NJ	All States
Dean, Health Professions	$88,200		
Highest		$97,500	$125,600
Lowest		80,600	61,000
Average		88,000	82,100
Dean, Music	77,400		
Highest		unpubl.[5]	107,600
Lowest			65,800
Average			84,800
Director, Admissions	61,000		
Highest		66,200	85,500
Lowest		51,300	27,100
Average		60,200	53,600
Director, Financial Aid	57,600		
Highest		63,600	75,600
Lowest		43,100	28,000
Average		52,400	48,500
Registrar	60,600		
Highest		66,300	78,800
Lowest		42,400	31,500
Average		57,400	53,600

[1] Salaries are rounded to the nearest hundred.

[2] ULowell combines Institutional Advancement and Development, which are separate categories in U. of Arkansas Survey.

[3] No data = not collected for this position.

[4] U. of Arkansas Survey excludes salaries of "acting" administrators.

[5] Unpublished = number of salaries reported was below minimum required for publication.

Sources

ULowell: "Personnel by Location" (VAX), 9/29/89.

New England, NY, NJ: U. of Arkansas Survey, "Distribution of Administrative Salaries Paid, 1989-90" (Fall '89) -- 11 public universities in New York/Boston Region: ULowell, UConn, UMass, UNH, UVermont, NJ Institute of Technology, 4 SUNY campuses, CUNY Graduate School.

All States: U. of Arkansas Survey, 147 public universities in 47 states.

Figure 15

SALARIES OF ENGINEERING FACULTY, Fall 1988

Rank	ULowell	UMass	UConn	URI	UVM	Northeast All U	National Public U
Professor							
Highest	$69,100	79,900	98,300	73,500	66,400	121,000	105,200
Lowest	51,200	54,800	53,400	52,800	47,000	30,000	10,300
Average	58,900	65,900	67,400	58,900	55,900	77,300	54,000
Assoc. Prof.							
Highest	53,200	63,800	66,600	50,600	52,900	83,500	69,900
Lowest	41,400	40,400	43,400	44,500	43,300	18,800	22,900
Average	47,500	52,100	50,500	46,200	48,400	47,800	43,500
Assist. Prof.							
Highest	42,900	49,600	54,000	44,000	46,800	57,100	51,700
Lowest	35,200	32,000	38,500	39,500	37,800	24,300	17,000
Average	39,300	43,800	45,000	40,700	42,900	42,200	36,800

Average Salaries for ULowell's ASEE Enrollment Categories

Professor	
ULowell	$58,900
Northeast, over 1,000 undergraduates	77,800/62,600*
Northeast, over 150 graduate students	78,600/63,200
National, over 1,000 undergraduates	78,200/59,400
National, over 150 graduate students	77,800/59,000
Associate Professor	
ULowell	47,500
Northeast, over 1,000 undergraduates	48,300
Northeast, over 150 graduate students	48,700
National, over 1,000 undergraduates	46,500
National, over 150 graduate students	46,100
Assistant Professor	
ULowell	39,300
Northeast, over 1,000 undergraduates	42,600
Northeast, over 150 graduate students	42,900
National, over 1,000 undergraduates	41,100
National, over 150 graduate students	40,700

---

* First average is for "Extraordinary" Professor, second is for Professor. Highest and lowest Northeast salaries cover both categories.

All salaries are rounded to the nearest hundred. ULowell salaries exclude faculty on unpaid leave.

Sources

ULowell: "Personnel by Location" (VAX), 10/24/88.

UMass, UConn, URI, UVM: N.E. Deans of Engineering, Salary Survey, fall 1988.

Northeast and National-All Univ.: American Society for Engineering Education (ASEE), 1988-89 Engineering Faculty Salary Survey, 70 universities ("northeast" includes midwestern states).

National--Public Universities.: AASCU/CUPA, 1988-89 National Salary Survey